# Montana Department of Transportation

## FINAL REPORT FOR SEP 14 DESIGN-BUILD PROJECT

**MCS FACILITY – WEST OF WIBAUX**
**Wibaux County**

**Project Number: IM 94-7(24)240**
**Control Number: 5307**

**February 1, 2006**

**MONTANA DEPARTMENT OF TRANSPORTATION**

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# EXECUTIVE SUMMARY

**Introduction** - The MDT Design-Build Team and Technical Review Committee (TRC) for this project developed the necessary documentation, solicited Statements of Qualifications and requested Technical Proposals and Bid Price Proposals from three short-listed Design-Build Firms. A design-build contract was executed for the MCS Facility west of Wibaux on August 2, 2004, the Notice to Proceed was issued on August 16, 2004 and construction of the project was substantially completed on September 2, 2005.

**Purpose** - The proposed Design-Build contracting method is an innovative process that is being considered by transportation agencies for the construction of highway projects. The Design-Build contracting method places the responsibility of design and construction with a single legal contracting entity. The Design-Build contracting method may result in a more cost efficient design as a result of the designer giving greater consideration to construction methods. This contracting method should result in a reduction in the time required from initiation of the project to the placement in service of the facility. MDT anticipates that use of the Design-Build method will result in a more cost effective facility with shorter overall project delivery period.

**Project Scope** - This project included Design and Construction of a new Motor Carrier Services (MCS) facility on the westbound lane of I-94 at the existing weigh scale site located in Wibaux County at reference post 240 west of the Wibaux interchange.

**Request For Qualifications** - The Request for Qualifications (RFQ) package was advertised on April 12, 2004. Statement of Qualifications (SOQ) responses were received from five design-build teams (Firms) on May 3, 2004. A Technical Review Committee (TRC) consisting of nine MDT staff members from various project-related disciplines independently evaluated and scored the SOQ of the five teams based on established Evaluation Criteria and Scoring Guide. The TRC produced a ranked short list of three teams that were invited to submit Proposals.

**Technical Proposal** - MDT developed selection procedures to provide a balanced assessment of the experience and qualifications of the contractor, the proposed facility plan, the project completion time and the project cost. Proposals were submitted in two separate sealed covers, one containing the Technical Proposal and one containing the Bid Price Proposal. All Technical Proposals were evaluated by the TRC prior to opening the Bid Price Proposals. The Technical Proposal were scored first. This score was based on the criteria listed in the scoring table below. The Firms were not requested to attend a meeting with the TRC to answer any questions with respect to the Technical Proposal before the Technical Proposal was evaluated and scored. All Technical Proposals were scored and submitted to the Selection Committee before any Bid Price Proposals were opened. The TRC reviewed and evaluated each Technical Proposal according to the specified criteria based on a maximum possible value of 5,000 points.

**Bid Price Proposal** - Contract Plans Bureau publicly opened the sealed Price Proposals at 10:00 am, July 12, 2004. Contract Plans Bureau divided each Firm's total price amount by the Technical Proposal total score provided by the TRC to obtain an adjusted score. The lowest adjusted score is considered the best value proposal. Contract Plans Bureau provided the adjusted score and supporting information for each Firm to the Selection Committee.

The following formula was used to determine the Adjusted Score for each Firm:

$$\text{Adjusted Score} = \frac{\text{Bid Price Proposal Amount (\$)}}{\text{Technical Proposal Total Score}}$$

The Selection Committee reviewed the Bid Price Proposals and Technical Proposal evaluation and scoring information provided by the TRC and approved an award recommendation.

**Post Construction De-Briefing** – MDT's Design-Build Engineer arranged and facilitated separate de-briefing meetings with staff members from MDT Glendive District, the Construction Contractor, Design Consultant, MDT Facilities and MCS. The meetings were conducted between October 3 and October 13, 2005. The purpose of the Post Construction De-Briefings is to provide a process for all stakeholders to review and discuss the completed project and provide input related to the design and construction phase of MDT's Design-build process.

## CONCLUSIONS

Use of the Design-Build contracting method for the first MDT Pilot Project has accomplished the purpose of the program as stated in the workplan by producing a savings in time and reduction in the MDT resources necessary to design and construct the project. The timesavings are clearly evident since the project proceeded from preliminary engineering through R/W acquisition to contract award in six months and the design and construction was completed in 12 months. This time period is much less than similar design/bid/build projects that can typically require as much as thirty-six months from preliminary engineering to contract award. This project has been the first step in the process that will allow MDT to explore this innovative contracting method. Based on in-house and industry reactions and comments received during the post construction de-briefings, the initial opinion is that the Design-Build contracting method has been successful for this project.

The lessons learned from this project and other planned Pilot Projects will provide relevant and valuable information that can be utilized by legislators in deliberating the merits of continuing the design-build program and providing an additional tool that MDT can use to expedite project delivery.

This report was prepared by:

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# FINAL REPORT FOR SEP 14 DESIGN-BUILD PROJECT

**MCS Facility - West of Wibaux**
**IM 94-7(24)240, CN 5307**

## I. INTRODUCTION

The Montana Department of Transportation (MDT) submits this Final Report under the provisions of Special Experimental Project No. 14 (SEP 14) for the use of innovative contracting practices.

The MDT Design-Build Team and Technical Review Committee (TRC) for this project developed the necessary documentation, solicited Statements of Qualifications and requested Technical Proposals and Bid Price Proposals from three short-listed Design-Build Firms. A design-build contract was executed for the MCS Facility west of Wibaux on August 2, 2004, the Notice to Proceed was issued on August 16, 2004 and construction of the project was substantially completed on September 2, 2005.

## II. PURPOSE

The proposed Design-Build contracting method is an innovative process that is being considered by transportation agencies for the construction of highway projects. The Design-Build contracting method places the responsibility of design and construction with a single legal contracting entity. The Design-Build contracting method may result in a more cost efficient design as a result of the designer giving greater consideration to construction methods. This contracting method should result in a reduction in the time required from initiation of the project to the placement in service of the facility. MDT anticipates that use of the Design-Build method will result in a more cost effective facility with shorter overall project delivery period.

MDT also desires to use the Design-Build method as a means of exploring innovative contracting methods. Historically, MDT has used the design/bid/build method and has very limited experience with the Design-Build method. With increasing demands on available highway funds, reductions in MDT staffing levels and the prospect of program funding increases, MDT is actively pursuing methods that have the potential to address these issues and enhance the use of each transportation tax dollar. The Design-Build method of contracting is a potential tool by which this goal can be accomplished.

## III. SELECTION AND AWARD PROCESS

### A. PROJECT SCOPE

This project included Design and Construction of a new Motor Carrier Services (MCS) facility on the westbound lane of I-94 at the existing weigh scale site located in Wibaux County at reference post 240 west of the Wibaux interchange. The following are scope of work items related to the project.

Weigh Station Facilities and Equipment

- Demolished existing westbound weigh scale facility and performed site grading and surfacing required to construct new facility.
- Provided lighted truck parking and vehicle inspection area.
- "Fairbanks" brand static weighing equipment was utilized.
- Provided general facility functionality, including dedicated truck driver restrooms in conformity with the prototype facility drawings provided (See Attachment B - Prototype facility floor plans and elevations).
- New building required an adequate heating and air conditioning system.
- New facility complies with the Americans with Disabilities Act (ADA) requirements.
- The new facility included purchase of the electronic equipment and sensors for a dedicated weigh station Weigh-In-Motion (WIM) system. The WIM detail was provided by MDT Planning Division, Traffic Data Collection Section.
- The WIM site is located approximately three miles east of the new weigh scale facility entrance ramp. The WIM cabinet is located on the north side of I-94 at Mile Post 243. The Firm coordinated with MDT's STARS reporting program for the purchase of STARS piezo WIM data collection equipment for both westbound and eastbound lanes. MDT installed the WIM system, piezo sensors, loops and associated hardware and fixtures after the project was completed. The two STARS installations have no connectivity with the new westbound weigh scale facility or the new eastbound "A" type portable weighing facility.

Roadway

- New facility provided longer entrance and exit ramps to mainline I-94.
- No landscaping or irrigation was required beyond site restoration and re-vegetation.

Utilities

- Electrical power and telephone service was provided to a new type "P" cabinet with base at the new westbound weight scale facility for the future WIM recorder. Pull boxes and conduit to facilitate future underground connectivity of sensors, loops and recorder were provided.
- Existing utility adjustments and relocations required for the new facility and demolition of the existing facilities were completed. The original (existing) network connection, electrical and telephone service were provided from the existing westbound weigh scale facility to the eastbound facility.
- Design and construction of all new utilities was completed to include: water service, sanitary sewer service, electrical service and telephone service. New underground conduit and pull boxes were installed and connectivity was provided for CCTV, LAN, telephone, electrical and radio between the new weigh scale facility and the new "A" Type portable weighing site.
- A communications tower (approximate height of 150 feet) was constructed at the new westbound weigh scale facility.

Construction Sequencing

- When the new westbound weigh scale facility was substantially completed, the existing eastbound weight scale facility was demolished and a standard MCS "A" type portable weighing facility was designed and constructed at the site (See Attachment C - "A" Type portable weighing site design criteria). The "A" type facility included electrical service, computer network connectivity, nine truck parking spaces and vault toilet facilities.

- An operational facility was maintained at all times during the project for use by MCS Officers including network connection, electrical and telephone service.

Permits and Environmental Process

- Required temporary and permanent environmental permits (including water service and sewage disposal), subdivision and construction permits required for the site were obtained.
- MDT completed the NEPA/MEPA document prior to issuing the RFP.

General

- Substantially complete the project within 365 calendar days.
- MDT provided all right of way services and obtained required right of way prior to issuing the RFP.
- The Firm provided a Quality Management Plan.
- MDT provided construction engineering and inspection services (Quality Assurance and Independent Assurance).

## B. SCHEDULE OF EVENTS

Below is the schedule of significant events that occurred to complete the project.

| DATE | EVENT |
|---|---|
| April 12, 2004 | Advertised RFQ |
| May 3, 2004 | SOQ Responses Due |
| May 10, 2004 | Firms Short-Listed |
| May 17, 2004 | Issued RFP |
| May 24, 2004 | Question Deadline for the Pre-Proposal Meeting - 10:00 a.m. local time |
| May 25, 2004 | Pre-Proposal Meeting (9:00 to 11:00 a.m. in 2nd Floor East and West Conference Room, 2701 Prospect, Helena, MT) |
| June 28, 2004 | Proposals Due (Technical and Price) by 9:00 a.m. local time |
| July 12, 2004 | Public Bid Price Proposal Opening at 10:00 a.m. local time in Contract Plans Bureau, Room 101, 2701 Prospect, Helena, MT |
| August 2, 2004 | Contract Award |
| August 16, 2004 | Issued Notice to Proceed |
| September 2, 2005 | Construction Substantially Completed |

## C. HISTORY

The Request for Qualifications (RFQ) package was advertised on April 12, 2004. Statement of Qualifications (SOQ) responses were received from five design-build teams (Firms) on May 3, 2004. A Technical Review Committee (TRC) consisting of nine MDT staff members from various project-related disciplines independently evaluated and scored the SOQ of the five teams based on established Evaluation Criteria and Scoring Guide. The TRC produced a ranked short list of three teams that were invited to submit Proposals.

MDT developed selection procedures to provide a balanced assessment of the experience and qualifications of the Firm. These procedures were used to determine the ranked short list of Firms to receive the RFP and be invited to submit proposals. The TRC reviewed and evaluated the SOQ according to the following criteria based on a maximum possible value of 10,000 points.

**SOQ Scoring Guide:**

Each evaluation criteria was assigned a Scoring Weight and the TRC ranked each Firm by criteria on a 0 to 10 scale, with 10 being best. The TRC considered the following guidelines when determining the ranking score for each criteria.

**Superior Response (9.5-10.0):** A superior response will be a highly comprehensive, excellent reply that meets all of the requirements of the areas within the specific criteria. In addition, the response covers areas not originally addressed within the SOQ evaluation criteria and includes additional information and recommendations that would prove both valuable and beneficial to MDT. This response is considered to be an excellent standard, demonstrating the Firm's authoritative knowledge and understanding of the project.

**Very Good Response (8.5-9.4):** A very good response will provide useful information, while showing experience and knowledge within the evaluation criteria. The response is well thought out and addresses all requirements set forth in the RFQ. The Firm provides insight into their expertise, knowledge and understanding of the subject matter outlined in the criteria.

**Good Response (7.5-8.4):** A good response meets all the requirements of the RFQ and has demonstrated in a clear and concise manner a thorough knowledge and understanding of the subject matter outlined in the criteria. This response demonstrates an above average performance with no apparent deficiencies noted.

**Fair Response (6.5-7.4):** A fair response meets the requirements of the RFQ in an adequate manner. This response demonstrates an ability to comply with guidelines, parameters, and requirements with no additional information put forth by the Firm.

**Poor Response (6.0-6.4):** A poor response minimally meets most requirements of the RFQ. The Firm has demonstrated knowledge of the subject matter only as outlined in the criteria.

**Inadequate Response (0-5.9):** An inadequate response does not meet the requirements of the RFQ. The Firm has not demonstrated knowledge of the subject matter outlined in the RFQ and their response is considered inadequate.

## SOQ EVALUATION CRITERIA SCORING TABLE

| EVALUATION CRITERIA NO. | DESCRIPTION | SCORING WEIGHT | RANKING | TOTAL SCORE |
|---|---|---|---|---|
| 1 | Identify the legal entity (business structure) authorized to render the design-build services. | 10 | | |
| 2 | Evidence or proof of capability to meet the requirements for insurance and bonding capacity. | 10 | | |
| 3 | Identify participating companies and business addresses of the Firm members. Provide an organization chart relating to the project and include the names, titles, classifications and experience (resumes) of key personnel for each of the Firm members and the overall Project Manager, Design Manager, Construction Manager and Quality Control Manager. | 200 | | |
| 4 | Demonstrate past experience of Firm members working together on similar type projects, both for construction and architectural/engineering services. May include design-build and design/bid/build projects. | 100 | | |
| 5 | Provide a listing of active and completed design-build projects similar to this project, including starting date and completion date or anticipated completion date, budget, owner performance evaluation (if available), references, points of contact, telephone numbers of the proposed Firm members. Past design-build experience may be drawn from projects contracted by MDT, other DOT, private industry or local governments. | 150 | | |
| 6 | Other Experience: Provide a listing of active and completed projects, other than design-build projects, that are similar to this project including references, points of contact and telephone numbers for the owner and team members performing engineering design and construction. | 150 | | |
| 7 | Approach and Understanding of Project Requirements: Briefly describe the project issues identified and proposed resolutions by the Firm. | 200 | | |
| 8 | Design-Build Information: List each Firm member's current Experience Modification Rate and provide copies of each Firm member's OSHA Form 200 for the last two years. | 10 | | |
| 9 | Provide evidence of each Firm member's experience with local and state government entities, permit and regulatory agencies and community groups. | 50 | | |

| | | | | |
|---|---|---|---|---|
| 10 | List details (dates, locations and reasons) of the Firm and its members of any citations received from the Department of Environmental Quality, Army Corps of Engineers, Environmental Protection Agency, any National Pollutant Discharge Elimination System, Montana National Pollutant Discharge Elimination System, or other agency permit violations during the last three years. | 30 | | |
| 11 | Provide an outline of the Firm's proposed quality management plan for all project phases that incorporates effective QC/QA. | 80 | | |
| 12 | Provide an outline of how the Firm anticipates meeting or exceeding the DBE goal established for this project. | 10 | | |

Request for Proposal (RFP) packages were issued to the three short-listed Firms on May 17, 2004 with responses due on June 28, 2004.

Three sealed Proposals were received on June 28, 2004 and consisted of a Technical Proposal package and Bid Price Proposal package. Proposals were received from the following Firms:

- Dick Anderson Construction, Inc./Morrison Maierle, Inc./Crossman Whitney Griffin Architects, P.C.
- Century Companies/HKM Engineering
- Morgen & Oswood Construction Company/Entranco

The TRC evaluated and scored the written Technical Proposal submitted by each Firm prior to opening the Bid Price Proposals. This score was based on evaluation criteria and scoring guideline provided in the RFP package.

**Technical Proposal:**

MDT developed selection procedures to provide a balanced assessment of the experience and qualifications of the contractor, the proposed facility plan, the project completion time and the project cost. Proposals were submitted in two separate sealed covers, one containing the Technical Proposal and one containing the Bid Price Proposal. All Technical Proposals were evaluated by the TRC prior to opening the Bid Price Proposals. The Technical Proposal were scored first. This score was based on the criteria listed in the scoring table below. The Firms were not requested to attend a meeting with the TRC to answer any questions with respect to the Technical Proposal before the Technical Proposal was evaluated and scored. All Technical Proposals were scored and submitted to the Selection Committee before any Bid Price Proposals were opened. The TRC reviewed and evaluated each Technical Proposal according to the following criteria based on a maximum possible value of 5,000 points.

**Technical Proposal Scoring Guide:**

Each evaluation criteria is assigned a Scoring Weight and the TRC ranked each Firm by criteria on a 0 to 10 scale, with 10 being best. The TRC considered the following guidelines when determining the ranking score for each criteria.

**Superior Response (9.5-10.0):** A superior response will be a highly comprehensive, excellent reply that meets all of the requirements of the areas within the specific criteria. In addition, the response covers areas not originally addressed within the RFP/DCCP evaluation criteria and includes additional information and recommendations that would prove both valuable and beneficial to MDT. This response is considered to be an excellent standard, demonstrating the Firm's authoritative knowledge and understanding of the project.

**Very Good Response (8.5-9.4):** A very good response will provide useful information, while showing experience and knowledge within the evaluation criteria. The response is well thought out and addresses all requirements set forth in the RFP/DCCP. The Firm provides insight into their expertise, knowledge and understanding of the subject matter outlined in the criteria.

**Good Response (7.5-8.4):** A good response meets all the requirements of the RFP/DCCP and has demonstrated in a clear and concise manner a thorough knowledge and understanding of the subject matter outlined in the criteria. This response demonstrates an above average performance with no apparent deficiencies noted.

**Fair Response (6.5-7.4):** A fair response meets the requirements of the RFP/DCCP in an adequate manner. This response demonstrates an ability to comply with guidelines, parameters, and requirements with no additional information put forth by the Firm.

**Poor Response (6.0-6.4):** A poor response minimally meets most requirements of the RFP/DCCP. The Firm has demonstrated knowledge of the subject matter only as outlined in the criteria.

**Inadequate Response (0-5.9):** An inadequate response does not meet the requirements of the RFP/DCCP. The Firm has not demonstrated knowledge of the subject matter outlined in the RFP/DCCP and is considered non-responsive.

## TECHNICAL PROPOSAL EVALUATION CRITERIA SCORING TABLE

| EVALUATION CRITERIA NO. | DESCRIPTION | SCORING WEIGHT | RANKING | TOTAL SCORE |
|---|---|---|---|---|
| 1 | Credit will be given for minimizing impacts to the environment during all phases of design/construction and ensuring that all environmental permits and commitments are honored. The amount of credit should be proportional to the amount of reduction in wetlands or other types of mitigation quantities. | 20 | | |
| 2 | Credit will be given for a timely, complete and comprehensive quality management plan that includes all phases of the project and incorporates effective QC/QA. | 70 | | |

| | | | | |
|---|---|---|---|---|
| 3 | Credit will be given for a comprehensive and logical schedule that minimizes contract duration while adhering to applicable Specifications. Proper attention should be provided to the project's critical path elements. Project completion time with 12 months maximum. **Note:** *Schedules exceeding the maximum time requested by MDT are considered non-responsive.* | 100 | | |
| 4 | For building facilities, credit will be given for a design that minimizes periodic and routine maintenance. The following elements should be considered: access to provide adequate inspections and maintenance of plumbing, HVAC and electrical systems and quality of construction materials. Credit will be assigned for exceeding minimum material requirements to enhance durability of structural components and for providing extended warranties/guarantees for major elements such as roof systems, siding, doors and fixtures. | 40 | | |
| 5 | Credit will be given for the quality and quantity of design resources, innovation, design coordination and plans preparation schedule, construction coordination plan and minimizing design changes, functionality of the facilities design by exceeding minimum material requirements to enhance durability of project components. Credit will also be given for construction methods that minimize impact to the public and environment, reduce costs and minimize contract duration. | 150 | | |
| 6 | Credit will be given for the Firm’s experience on similar work and the individual team member’s successful design-build experience. Consideration will be given to Firm leadership and areas of responsibility, Firm internal coordination plan, and Firm commitment to and history of providing a quality project, completed on time and within budget. | 80 | | |

| | | | | |
|---|---|---|---|---|
| 7 | Claims records for each Firm member will be reviewed. Review will include history of claims pertaining to additional compensation or time extensions that are not negotiated and resolved through an Administrative Settlement, or final estimate quantities disputes that proceed, after final acceptance, to court or arbitration. History of disputes being escalated to the Board of Contract Appeals (or the equivalent with other owners) by a member of the Firm will also be considered. | 40 | | |

All Technical Proposals were independently scored and submitted to the Contract Plans Bureau before the Bid Price Proposals were opened.

The TRC submitted a final Technical Proposal score for each Firm to the Contract Plans Bureau and FHWA. All short-listed Firms were notified of the date, time and location of the public opening of the sealed bid Price Proposals.

Contract Plans Bureau publicly opened the sealed Price Proposals at 10:00 am, July 12, 2004. Contract Plans Bureau divided each Firm's total price amount by the Technical Proposal total score provided by the TRC to obtain an adjusted score. The lowest adjusted score is considered the best value proposal. Contract Plans Bureau provided the adjusted score and supporting information for each Firm to the Selection Committee.

The following formula was used to determine the Adjusted Score for each Firm:

$$\text{Adjusted Score} = \frac{\text{Bid Price Proposal Amount (\$)}}{\text{Technical Proposal Total Score}}$$

The Selection Committee reviewed the Bid Price Proposals and Technical Proposal evaluation and scoring information provided by the TRC and approved an award recommendation. The following is a summary of the proposal results:

| FIRM | BID PRICE PROPOSAL AMOUNT | TECHNICAL PROPOSAL TOTAL SCORE | ADJUSTED SCORE (Best Value) |
|---|---|---|---|
| Century Companies/HKM Engineering | $4,724,000.00 | 37,130 | 127.23 |
| Morgen & Oswood Construction Company/Entranco | $5,205,300.00 | 34,908 | 149.12 |
| Dick Anderson Construction, Inc./Morrison Maierle, Inc./Crossman Whitney Griffin Architects, P.C. | $6,030,000.00 | 37,332 | 161.52 |

Since all three Bid Price Proposals exceeded the original Engineer's Estimate of $3,100,400.00 by more than 25%, the TRC was directed to review the scope of work and original cost estimate.

After review of the original Cost Estimate, errors were discovered that resulted in substantial cost increases. The original Cost Estimate was subsequently revised to $4,064,300.00.

After considering the options, the Selection Committee determined that proceeding with a Best and Final approach would increase the risk that the award could be contested, since there are no provisions in the RFP or the MDT Design-Build Guidelines outlining a procedure to be followed if all Bid Price Proposals exceeded the 25% limit. Information outlining the best and final procedure has been included the MDT Design-Build Guidelines and will be included in future project RFP. Since the revised Cost Estimate placed the lowest Bid Price Proposal within the 25% automatic award limit, the Selection Committee determined that the established award procedure should be followed and would be in the best interest of MDT and the proposing Firms.

Based on the best value proposal, the Selection Committee recommended the contract be awarded to the Century Companies, Inc./HKM Engineering, Inc. Design-Build Team in the amount of $4,724,000.00 and the Montana Highway Commission subsequently awarded the contract on August 2, 2004.

## D. INDUSTRY REACTION TO THE SELECTION AND AWARD PROCESS

Industry reaction was solicited using a questionnaire that was sent to each Firm responding to the RFQ and short-listed Firms that respond to the RFP. Questions and comments received from industry during the RFQ process, from the pre-proposal meeting and during the RFP and proposal process were utilized to develop the following list of reactions and effects on the Pilot Program. In addition to industry reactions, reactions and comments from TRC members regarding the evaluation and scoring process for the SOQ and Technical Proposals are also included.

| RESPONDER | REACTION | PROGRAM IMPACT |
|---|---|---|
| DB Contractor | Information provided with RFQ was adequate, but additional time should be provided for SOQ preparation. | Time allowed for preparation of SOQ was increased for future pilot projects. |
| DB Contractor | Provide additional time between the date Technical Proposal is due and date Bid Price Proposal is due to allow completion of preliminary plans and quantities for obtaining price quotes from subcontractors and suppliers. | Bid Price Proposals will be due at least 14 calendar days after the Technical proposals for future pilot projects. |
| Design Consultant | Provide a methodology for the DB Firms to present alternatives and options in the proposals. | RFP for future pilot projects clearly outlines the procedure for addressing alternatives and options that are in addition to or in conflict with the RFP criteria in the Technical Proposal. |
| TRC Members | The evaluation and scoring criteria included in the RFP should coincide with the submittal sections required in the Technical Proposal in order to more clearly delineate the location of specific information. This will make it easier for proposers to organize their proposals and review and evaluation by the TRC. | RFQ and RFP for future pilot projects will require a separate section in the SOQ and Technical Proposal for each evaluation criteria. |
| TRC Members and Design-Build Team Members | MDT Design-Build Guidelines did not provide a procedure to follow when all Bid Price Proposals received exceeded 25% of the Engineer's Estimate. Created time delay in the selection process. | MDT DB Guidelines were updated to include a "best and final" procedure to be followed if all Bid Price Proposals exceed the Engineer's Estimate by more than 25%. Future pilot project RFP will also include the procedure. Firms will be advised to inform MDT prior to the proposal due date if they determine the cost estimate shown in the RFP is not reasonable. |
| DB Contractors, Design Consultants and TRC Members | Overall, the MDT design-build pilot program provides a fair and equitable procedure for evaluating, scoring and selecting a design-build Firm. | Only minor procedural and text changes to the project workplan have resulted from reactions received during the initial stages of the first design-build pilot project. |

# IV. DESIGN AND CONSTRUCTION PROCESS

## A. GENERAL

**The following were key persons directly involved in design and construction of the project and participated in the post construction de-briefing process:**

Jim Slaska – Engineering Project Manager, MDT Glendive District
Kyle Berry – Civil Engineering Specialist, MDT Glendive District
Danny Hood, P.E. – District construction Engineer, MDT Glendive District
Jim Frank, P.E. – District Engineering Services Supervisor, MDT Glendive District
Tom Evans, P.E. – Project Manager, Century Companies, Inc. – Lewistown, MT
Bob Koch – Construction Manager, Century Companies, Inc. – Lewistown, MT
Larry Florshinger - Construction Superintendent, Century Companies, Inc. – Lewistown, MT
John Shoff, P.E. – Design Manager, HKM Engineering, Inc. – Billings, MT
Teri Dewing, P.E. – Design Project Engineer, HKM Engineering, Inc. – Billings, MT
Larry Murolo – Chief, Facilities Bureau – MDT Helena
Dennis Hult – Chief, Operations Bureau – MCS Helena
Richard Kershaw – Captain, Region 3 – MCS Billings

## B. PURPOSE

Mac McArthur, MDT Design-Build Engineer, arranged and facilitated separate de-briefing meetings with staff members from MDT Glendive District, Construction Contractor, Design Consultant, MDT Facilities and MCS. The meetings were conducted between October 3 and October 13, 2005.

The purpose of the Post Construction De-Briefings is to provide a process for all stakeholders to review and discuss the completed project and provide input related to the design and construction phase of MDT's Design-Build process. The following agenda was used to ensure specific items were addressed, but participants were encouraged to present other topics or issues during the meeting that were not listed on the agenda.

1. ***Contract Administration***
    a. Identify specific items that **enhanced** the overall design-build process and had a positive impact on project progress and quality.
    b. Identify specific items that were considered **shortcomings** in the overall design-build process and did or could have had a negative impact on project progress and quality.
2. ***Specific Issues/Problems and Subsequent Solutions***
3. ***Plans/Specifications Review and Approval Process***
4. ***Document Control***
5. ***Scheduling and Time to Complete Project.***
6. ***Quality Control***
    a. Design
    b. Construction

7. ***Coordination with MCS***
8. ***Coordination with Facilities Bureau***
9. ***Change Orders***
10. ***Potential Claims***
11. ***New Technology or Construction Processes Used***
12. ***Any Innovative Solutions or Methods.***
13. ***R/W Issues***
14. ***Permit Issues***
15. ***Other Items/Issues***

## C. POST CONSTRUCTION DE-BRIEFING COMMENTS

| AGENDA ITEMS | MDT FIELD STAFF |
|---|---|
| **Contract Administration** | Contract administration for the construction work was very similar to a normal design/bid/build project. Much more design involvement, approvals and overall paperwork was required of the EPM. D-B Firm did a very good job with their QC. The QC requirements and who is responsible for specific QC testing should be better defined in the RFP or in separate QC Guidelines. Overall, the project resulted in a good quality product. |
| **Specific Issues and Solutions** | 1. In some cases, the construction field crew did not feel they were in control of the project. Field visits and direct on-site input by the tenant (MCS) created issues between the designer, contractor, MDT field staff and Facilities.<br>2. It was recommended that for future D-B facilities type projects, a representative of the Facilities Bureau be assigned full time to work with the EPM during construction of the project.<br>3. There were instances when the tenant and operator (MCS and Facilities) did not review (or adequately review) plans prior to construction due to time constraints or lack of resources. |
| **Plans & Specifications Approval Process** | 1. There was initial confusion regarding the number of copies for each submittal and who should receive copies. For future D-B projects, the RFP should identify how many copies of each report and plan submittal should be made and designate which agency and functional unit within MDT should receive a copy for review and comment.<br>2. In some instances, the correct MDT reviewer did not receive submittals for review in a timely manner and was not able to meet the relatively short (14 day) review period. In order to better understand the process and time constraints of design-build, MDT will provide design-build training for functional unit staff that will be directly involved in submittal review and approvals.<br>3. Plan submittals should have contained more details. It was recommended that future D-B projects require a 65% complete submittal prior to the 90% complete submittal to allow more opportunity for revisions and changes.<br>4. The MDT design-build process should better define the process of how 90% completed plans and specifications can be stamped "Released For Construction" with any minor construction or design changes addressed by the as-built plans instead of having to submit new sheets for each minor change. |

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| **Document Control** | EPM used an Excel spreadsheet to document and track all submittals and other contractual documents. This provided adequate document control for the project. |
| **Schedule and Contract Time** | Time to complete the project was adequate. NTP was issued August 6, 2004. Plans were submitted the end of August 2004, and construction started September 27, 2004. The project was completed on September 2, 2005 with 27 days of liquidated damages. The D-B Firm did not keep their schedule updated, and in some cases, it was not realistic because of major changes necessitated by the critical path work activities. Future D-B contracts should place more emphasis on project schedule updates and include means to enforce compliance. |
| **Quality Control - Design** | Designer provided QC checked plans and specifications in accordance with their written Quality Management Plan. |
| **Quality Control - Construction** | D-B Firm did a very good job with their QC. The QC requirements and who is responsible for specific QC testing should be better defined in the RFP or in separate QC Guidelines. |
| **Coordination With MCS** | See comments under Contract Administration above. |
| **Coordination With Facilities** | See comments under Contract Administration above. |
| **Change Orders** | One change order was approved for approximately $20,000 to cover various items added to the contract or changes requested by MDT based on input from MCS and Facilities. |
| **Claims** | None noted. |
| **New Technology or Construction Methods** | 1. Use of recycled asphalt concrete for base material.<br>2. Recycled existing luminaries on the project. |
| **Innovative Items** | 1. Obtaining and using borrow from one side of the interstate and wasting material on the other side of the interstate.<br>2. Use of radio-controlled “Open-Closed” signs. |
| **R/W issues** | None noted. |
| **Permit Issues** | All permits need to be obtained in MDT’s name, not the D-B Firm’s name. This will avoid confusion regarding billings for permit fees (Example – Communications Tower) and monthly service changes after the project is completed and operation of the facilities are the responsibility of MDT. No other permits issues were noted. |
| **Other Items/Issues** | Comments from the MDT field crew included: Liked the process and it required less MDT manpower. Is a good process and useful tool for project delivery, but generated a lot of additional paperwork early in the process. |

| **AGENDA ITEMS** | **MDT DESS** |
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| **Contract Administration** | The project progressed very well from design through construction. DESS had limited involvement during construction of the project, but did provide plan and specification reviews for the roadway and traffic items of work. |
| **Specific Issues and Solutions** | No comments noted. |
| **Plans & Specifications Approval Process** | Plans and specifications review and approval process was much different than the normal MDT Consultant Design review process. The D-B process was much easier to perform and required less time and resources. |
| **Document Control** | No comments noted. |
| **Schedule and Contract Time** | No comments noted. |

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| **Quality Control - Design** | Plans and specifications submittals did not always include the QC checklists as required by the D-B Firm's Quality Management Plan. |
| **Quality Control - Construction** | No comments noted. |
| **Coordination With MCS** | No comments noted. |
| **Coordination With Facilities** | No comments noted. |
| **Change Orders** | No comments noted. |
| **Claims** | No comments noted. |
| **New Technology or Construction Methods** | No comments noted. |
| **Innovative Items** | No comments noted. |
| **R/W issues** | The design exception related to slopes along the eastbound side would not have been necessary if additional right-of-way was available. *(Author's Note: All right-of-way was acquired by MDT prior to award of the contract in order to meet FHWA requirements. Any additional right-of-way acquired during design and construction would have an adverse impact on the overall project completion schedule.)* |
| **Permit Issues** | No comments noted. |
| **Other Items/Issues** | There seemed to be confusion on the part of the D-B Firm and the utility owners regarding the process and responsibility necessary to adjust, relocate and provide new utility services for the project. It was recommended that future D-B projects include a requirement that the D-B Firm designate a Utility Coordinator to provide liaison and single-point contact for all utility work. *(Author's Note: The third and final MDT D-B Pilot Project RFP [Dupuyer – SE Reconstruction Project] included this requirement.)* |

| **AGENDA ITEMS** | **CONTRACTOR** |
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| **Contract Administration** | 1. Success of the D-B process depends on the MDT staff involved in the project and for this project, the D-B Firm and MDT staff worked very well together.<br>2. The D-B contractor's reaction to the process is also a key to success. It is a different process for most contractors, but can be learned through experience and training.<br>3. It is recommended that those persons not directly involved in the D-B project contract administration stay out of the contractor's day-to-day operations and work through MDT's EPM.<br>4. It was recommended that the MDT EPM only be responsible for one D-B project, with no concurrent responsibility for other construction projects. Under the D-B process, during the early design stages, the amount of time required to address the paperwork associated with design plans and specifications review and approvals is much greater than required for a type design/bid/build construction project. Since the EPM is the single point of contact for design and construction, it is critical that their focus be on the D-B project. |
| **Specific Issues and Solutions** | 1. It was recommended that MCA provide D-B training for its members that have not experienced the process.<br>2. When this project is compared to other similar facilities type projects constructed using the traditional design/bid/build process, the quality of the finished product is much better using the D-B process.<br>3. It was recommended that for future facility type D-B projects with MCS as the tenant, include an MCS representative to work directly with the MDT EPM during design and construction of the project. |

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| **Plans & Specifications Approval Process** | 1. This process needs to be better defined and explained in the RFP or in separate guidelines addressing the number of submittals, copies required and what functional units and/or agencies should get copies for review, comment and approval.<br>2. It was recommended that an intermediate submittal be required (65% complete) before the 90% complete submittal because so many changes were made to the 90% complete submittals that it created confusion and resulted in plans stamped "Released for Construction" being revised without copies reaching the field for construction.<br>3. It was recommended that any minor revisions necessary after the plans are stamped "Released for Construction" be documented and changed during the as-built process.<br>4. It was suggested that future D-B projects require that all design services be provided under the D-B Firm's primary Design Consultant. It would facilitate coordination and communications since the D-B Contractor would only be dealing directly with one design firm instead of multiple design firms. (Example: architect, geotechnical, mechanical, electrical).<br>5. MDT EPM was very receptive to design changes that improved quality, reduced time and facilitated construction. |
| **Document Control** | Used an Excel spreadsheet to document and track submittals. Also used MT 406 and MT 407 forms. |
| **Schedule and Contract Time** | 1. Contract time was adequate, but it was suggested that future D-B projects consider location (weather concerns) and provide for weather days in the contract. *(Author's Note: Typically design-build projects are completion date contracts. This ensures the D-B team is responsible for and has control of the project schedule during design and construction.)*<br>2. It is recommended that for future design-build projects, "substantial completion" be specifically defined in the RFP to avoid confusion and misunderstanding later in the process. |
| **Quality Control - Design** | No comments noted. |
| **Quality Control - Construction** | Good QC was provided during construction and was demonstrated when the D-B Firm made the decision to grind the driving lanes in the scale site to provide a smoother ride. This was not at the request of , or required by MDT. |
| **Coordination With MCS** | Made every effort to address MCS concerns and preferences when known prior to actual construction. Overall, good coordination related to the scale installation and building interior layout. |
| **Coordination With Facilities** | There was some confusion related to the inspection and acceptance process of the new scale site facility when it was time to relocate from the existing temporary scale site to the newly constructed scale site in order to facilitate construction of the new eastbound facility. Solution was mutually developed and implemented without major construction delays. |
| **Change Orders** | The process worked well, but the RFP should define the process in more detail to provide a basis for tracking, documenting and approving minor changes as the project progresses. |
| **Claims** | No comments noted. |
| **New Technology or Construction Methods** | 1. Use of recycled asphalt concrete for base material.<br>2. Recycled existing luminaries on the project. |
| **Innovative Items** | 1. Obtaining and using borrow from one side of the interstate and wasting material on the other side of the interstate.<br>2. Use of radio-controlled "Open-Closed" signs.<br>3. The use of a Ground Heat Pump system was proposed, but MDT was concerned about user training and maintenance concerns that may result from the relatively remote location of the scale site, so a conventional HAV system was designed and installed. |

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| **R/W issues** | No comments noted. |
| **Permit Issues** | A building permit was required for each structure and had to be obtained prior to construction of the foundation. This involved additional permit costs and additional design effort prior to receiving the permits. |
| **Other Items/Issues** | 1. It is difficult to form one design-build team that can be utilized for all types of design-build projects because there are limited companies in Montana that have design-build experience, both contractors and consultants.<br>2. Nothing was included in the RFP regarding incentives/disincentives related to plant mix pavement.<br>3. Nothing was included in the RFP regarding the Fuel Price Adjustments.<br>4. Manual pay estimate process went very well. Payment was received about 2 weeks after estimate was submitted.<br>5. Overall, the MDT design-build process went very well. |

| **AGENDA ITEMS** | **DESIGN CONSULTANT** |
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| **Contract Administration** | 1. The design coordination with MDT was good. It is helpful to have an experienced and well-respected MDT EPM for D-B projects.<br>2. It is recommended that more MDT functional unit staff have D-B training in order to be more familiar with the process and their role in review and approval of the design, plans and specifications.<br>3. As a designer working for the D-B contractor, it was a different process. Everyone was excited in the beginning, but excitement faded as the project progressed.<br>4. It is recommended that future D-B projects require the designer, contractor and MDT staffs to co-locate for the project. |
| **Specific Issues and Solutions** | 1. D-B Contractor and other construction team members need to work closer with the designer, especially during the Technical Proposal preparation and in the early stages of the project design. |
| **Plans & Specifications Approval Process** | 1. The RFP provided some detail for specific submittals, but very little detail for other submittals. The process should be outlined and defined better in the RFP for future D-B projects.<br>2. With the number of submittals and MDT reviewers, and the relatively short review period, the MDT EPM appeared overloaded with work during the early stages of the project. |
| **Document Control** | No comments noted. |
| **Schedule and Contract Time** | No comments noted. |
| **Quality Control - Design** | The designer followed their written Quality Management Plan, which resulted in a design with quality plans and specifications. |
| **Quality Control - Construction** | D-B contractor met or exceeded minimum quality control requirements that resulted in a quality project. |
| **Coordination With MCS** | No comments noted. |
| **Coordination With Facilities** | No comments noted. |
| **Change Orders** | No comments noted. |
| **Claims** | No comments noted. |
| **New Technology or Construction Methods** | No comments noted. |

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| **Innovative Items** | The use of a Ground Heat Pump system was proposed, but MDT was concerned about user training and maintenance concerns that may result from the relatively remote location of the scale site, so a conventional HAV system was designed and installed. |
| **R/W issues** | No comments noted. |
| **Permit Issues** | No comments noted. |
| **Other Items/Issues** | 1. Design firm makes a strategic decision regarding D-B team participation on a project-by-project basis with pricing a factor.<br>2. The D-B team did not perform a joint risk assessment prior to submitting their proposal.<br>3. It was recommended that MCA and ACEC provide D-B training opportunities for their members.<br>4. Using the Rocker Scale project as a prototype was helpful, but the project still required a site-specific design to satisfy the RFP design criteria.<br>5. Needs to be a lot of coordination between the designer and contractor during design to take advantage of the experience and expertise of those actually constructing the project. For this project, there could have been more.<br>6. Overall, this was a good project for the design consultant and D-B is a good tool for MDT to use in project delivery. |

| **AGENDA ITEMS** | **MDT FACILITIES** |
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| **Contract Administration** | 1. There were some flaws in the RFP, but overall the process was a 100% success.<br>2. The project was administered in a professional manner with good MDT oversight.<br>3. Facilities Bureau staff visited the project approximately 6 times, but was not requested by the MDT EPM to visit the site. |
| **Specific Issues and Solutions** | 1. Facilities Bureau has the capability to provide and dedicate a full time building-related inspector for this type project, but it is not necessary. The key is to have good communications between Facilities Bureau and the MDT EPM.<br>2. For future D-B projects, if MDT desires materials, equipment or workmanship higher than required by code, they must be specified in the RFP and/or design criteria. |
| **Plans & Specifications Approval Process** | Submittals for Facilities review during the early stages were prior to starting construction, but later in the process, submittals were sparse and often after construction was started. |
| **Document Control** | No comments noted. |
| **Schedule and Contract Time** | No comments noted. |
| **Quality Control - Design** | Quality control of both design and construction was adequate because as a result, MDT has a quality facility. |
| **Quality Control – Construction** | MDT did much of the QC in some cases because responsibility for QC was not well defined in the RFP. |
| **Coordination With MCS** | Coordination and communications could have been better during the design phase. |
| **Coordination With Facilities** | Coordination and communications could have been better during design and construction of the project. |
| **Change Orders** | No comments noted. |
| **Claims** | No comments noted. |
| **New Technology or Construction Methods** | No comments noted. |
| **Innovative Items** | No comments noted. |
| **R/W issues** | No comments noted. |

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| **Permit Issues** | D-B Contractor worked directly with State Building Inspector to obtain building permits. |
| **Other Items/Issues** | There was confusion regarding responsibilities and tasks required of the D-B Firm and DOA regarding T1 communication issues. The issues were not resolved until the project was nearing completion. |

| **AGENDA ITEMS** | **MCS** |
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| **Contract Administration** | 1. As the tenant, MCS was very involved during construction through numerous site visits. 2. The short time required to complete the project was good.<br>3. There could have been better coordination and communication between the designer, MCS, Facilities and MDT field staff.<br>4. The overall D-B process could be improved, but MCS has a quality facility. |
| **Specific Issues and Solutions** | 1. For future D-B projects, if MDT desires materials, equipment or workmanship higher than required by code, they must be specified in the RFP and/or design criteria.<br>2. Due to the short review period, MCS did not have adequate opportunity to review all plans and specifications prior to start of construction.<br>3. Quality of submittals was not adequate for detailed review. Submittals should have been more specific about types of codes and standards being met. The RFP should have been more specific regarding submittal requirements.<br>4. No work should have been allowed until MCS completed their submittal reviews.<br>5. The RFP did not adequately address the coordination and responsibilities required between the D-B Firm and DOA regarding the T1 communication facilities.<br>6. It was recommended that future D-B projects include a requirement that the D-B Firm designate a Utility Coordinator to provide liaison and single-point contact for all utility and communications work. *(Author's Note: The third and final MDT D-B Pilot Project RFP [Dupuyer – SE Reconstruction Project] included this requirement.)* |
| **Plans & Specifications Approval Process** | No additional comments noted. |
| **Document Control** | No comments noted. |
| **Schedule and Contract Time** | No comments noted. |
| **Quality Control - Design** | No additional comments noted. |
| **Quality Control - Construction** | During site visits, MCS staff noted specific examples of poor quality control and advised MDT field staff for corrective action. |
| **Coordination With MCS** | 1. Coordination with MCS for the relocations and moves from old to new facilities was good.<br>2. MCS involvement in plans and specifications reviews was not adequate as noted in previous comments. |
| **Coordination With Facilities** | No comments noted. |
| **Change Orders** | No comments noted. |
| **Claims** | No comments noted. |
| **New Technology or Construction Methods** | MDT's process for addressing new technology or construction methods and innovative ideas did not take full advantage of those offered in the D-B Firm's Technical Proposal. *(Author's Note: MDT did not take decisive action to review and either approve or disapprove proposed new technology or construction methods and innovative ideas presented in the D-B Firm's Technical proposal. This process was refined and implemented for the third and final MDT D-B Pilot Project RFP [Dupuyer – SE Reconstruction Project]).* |

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| **Innovative Items** | No additional comments noted. |
| **R/W issues** | No comments noted. |
| **Permit Issues** | No comments noted. |
| **Other Items/Issues** | Based on a scale of 1 to 10, MCS staff participating in the project de-briefing rated the D-B process at a low of 3 and a high of 7. |

# V. CONCLUSIONS

Use of the Design-Build contracting method for the first MDT Pilot Project has accomplished the purpose of the program as stated in the workplan by producing a savings in time and reduction in the MDT resources necessary to design and construct the project. The timesavings are clearly evident since the project proceeded from preliminary engineering through R/W acquisition to contract award in six months and the design and construction was completed in 12 months. This time period is much less than similar design/bid/build projects that can typically require as much as thirty-six months from preliminary engineering to contract award. This project has been the first step in the process that will allow MDT to explore this innovative contracting method. Based on in-house and industry reactions and comments received during the post construction de-briefings, the initial opinion is that the Design-Build contracting method has been successful for this project.

***Based on the current Design-Build Pilot Program process, the key items identified that enhanced this project include:***

Selection and Award Process

- Overall, the MDT design-build pilot program provides a fair and equitable procedure for evaluating, scoring and selecting a Design-Build Firm.

Design and Construction Process

- It is helpful to have an experienced and well-respected MDT EPM for D-B projects.
- The 18-month design-build process substantially reduced the total project delivery time from the 3 to 5 years required for a typical design/bid/build project. This project proceeded from preliminary engineering through R/W acquisition to contract award in six months and the design and construction was completed in 12 months.
- Provide additional MDT functional unit staff design-build training so they are more familiar with the process and their role in review and approval of the design, plans and specifications.
- Both design and construction quality control was good and resulted in a quality product.
- All design and construction stakeholders in this project generally felt it was a good process that required less MDT manpower, resulted in a quality product and is a useful tool to expedite project delivery.
- Several new construction methods and innovative ideas were developed and implemented for this project: Use of recycled asphalt concrete for base material; Recycled existing luminaries; obtained and used borrow from one side of the interstate and wasted material on the other side of the interstate; and use of radio-controlled “Open-Closed” signs.

***Based on the current Design-Build Pilot Program process, the key items identified as shortcomings to this project include:***

Selection/Award Process

- Requiring Bid Price Proposals to be submitted concurrently with the Technical Proposals.
- RFP must clearly outline the procedure for addressing alternatives and options that are in addition to or in conflict with the RFP criteria in the Technical Proposal.
- MDT Design-Build Guidelines were updated to include a "best and final" procedure to be followed if all Bid Price Proposals exceed the Engineer's Estimate by more than 25%.

Design and Construction Process

- The RFP should identify how many copies of each report and plan submittal should be made and designate which agency and functional unit within MDT should receive a copy for review, comment and approval.
- The MDT design-build process should better define the process of how 90% complete plans and specifications can be stamped "Released For Construction" with any minor construction or design changes addressed by the as-built plans instead of having to submit new sheets for each minor change.
- D-B projects should include a requirement that the D-B Firm designate a Utility Coordinator to provide liaison and single-point contact for all utility work.
- If MDT desires materials, equipment or workmanship higher than required by code, they must be specified in the RFP and/or design criteria.
- There must be good and frequent coordination and communication between the designer, contractor, tenant, operator (Facilities) and MDT field staff.
- MDT's process for addressing new technology or construction methods and innovative ideas did not take full advantage of those offered in the D-B Firm's Technical Proposal.

The lessons learned from this project and other planned Pilot Projects will provide relevant and valuable information that can be utilized by legislators in deliberating the merits of continuing the design-build program and providing an additional tool that MDT can use to expedite project delivery.